

Listing of Claims:

Claim 1 (currently amended) A cathodic finger structure for diaphragm electrolytic cell, comprising a hollow body defining an internal volume in fluid communication with a perimetrical chamber and delimited by a conductive surface provided with holes coated with chemically inert porous diaphragm, said hollow body housing a reinforcing and electric current distributing internal element constituted by at least one sheet provided with projections, ~~characterized in that~~ wherein said projections have a shape equivalent to spherical caps or elliptic caps or caps with prismatic sections.

Claim 2 (currently amended) The finger structure of claim 1, ~~characterised in that~~ wherein the conductive surface provided with holes is an interwoven wire mesh or a perforated sheet.

Claim 3 (currently amended) The finger structure of ~~anyone of claims 1 or 2 characterised in that~~ of claim 1 wherein said at least one sheet is a single sheet provided with projections on both its major surfaces.

Claim 4 (currently amended) The finger structure according to ~~anyone of claims 1 to 3, characterised in that~~ claim 1 wherein said sheet provided with projections is secured to said conductive surface by means of an electrically conductive connection.

Claim 5 (currently amended) The finger structure of claim 4, ~~characterised in that~~ wherein said conductive connection is located on the apex of at least part of said projections.

Claim 6 (currently amended) The finger structure of ~~anyone of claims 4 or 5, characterised in that~~ claim 4 wherein said conductive connection establishes a plurality of generally equivalent ohmic paths for the uniform distribution of electric current.

Claim 7 (currently amended) The finger structure of ~~anyone of claims 1 to 6, characterised in that~~ claim 1 wherein said projections are arranged according to a square mesh pattern.

Claim 8 (currently amended) The finger structure of ~~anyone of claims 1 to 6, characterized in that~~ claim 1 wherein said projections are arranged according to a quincuncial pattern.

Claim 9 (currently amended) The finger structure of ~~anyone of the preceding claims, characterised in that~~ claim 1 wherein each vertical section of said at least one sheet comprises part of at least one of said projections.

Claim 10 (currently amended) The finger structure of ~~anyone of claims 1 to 9, characterised in that~~ claim 1 wherein the distance between the ~~centres~~ centers of two adjacent caps is ~~comprised~~ between 50 and 65 ~~millimetres~~ millimeters and the radii of extrados and intrados of said caps are ~~comprised~~ between 17 and 22 ~~millimetres~~ millimeters and between 12 and 16 ~~millimetres~~ millimeters respectively.

Claim 11 (currently amended) The finger structure of ~~anyone of the preceding claims,~~
~~characterised in that~~ claim 1 wherein the thickness of said sheet is comprised between 5 and 7
~~millimetres~~ millimeters.

Claim 12 (currently amended) The finger structure of ~~anyone of the preceding claims,~~
~~characterised in that~~ claim 1 wherein said internal volume defined by said hollow body is
subdivided by said at least one sheet into two portions in fluid communication with said
perimetrical chamber, and said portions are only partially occupied by said projections and are
available for the natural internal recirculation of electrolytes.

Claim 13 (currently amended) The finger structure of ~~anyone of the preceding claims,~~
~~characterized in that~~ claim 1 wherein said at least one sheet provided with projections is further
provided with openings in the residual flat areas.

Claim 14 (currently amended) The finger structure of ~~anyone of the preceding claims,~~
~~characterized in that~~ claim 1 wherein said projections are obtained by plastic deformation of said
at least one sheet.

Claim 15 (currently amended) The finger of ~~claims 1 to 13, characterised in that~~ claim 1
wherein said projections are independent pieces secured onto said at least one sheet.

Claim 16 (currently amended) The finger according to claim 15, ~~characterised in that~~ wherein
said projections are secured onto said at least one sheet by welding or brazing.

Claim 17 (currently amended) An electrolysis cell comprising an anodic compartment and a cathodic compartment separated by an inert porous diaphragm, wherein said cathodic compartment consists of a perimetrical chamber provided with at least one nozzle in the bottom for discharging electrolytes and with at least one nozzle in the top for gas outlet, and of a plurality of cathodic fingers according to ~~anyone of the preceding claims~~ claim 1 electrically connected to said perimetrical chamber.

Claim 18 (currently amended) A process of chlor-alkali electrolysis, ~~which comprises~~ comprising feeding a sodium chloride solution to the anodic compartment of the cell of claim 17, applying electric current and discharging a solution of caustic soda and depleted sodium chloride formed inside said internal volume of said plurality of cathodic fingers through said nozzle for discharging electrolytes and a hydrogen flow through said nozzle for gas outlet.

Claim 19 (currently amended) The process of claim 18 ~~characterised in that~~ wherein said hydrogen has free ascensional motion inside the internal volume of said plurality of cathodic fingers and free longitudinal motion towards said perimetrical chamber, and in that said solution of caustic soda and depleted sodium chloride has free recirculation in the internal volume of said plurality of cathodic fingers.

Claim 20 (cancelled)